103(a) as allegedly being unpatentable over Nilsen et al., U.S. Patent No. 5,668,986 (hereinafter

"Nilsen").

, Applicants traverse the rejections as follows.

II. Claim Rejections -- Arnold and Kobayashi

Claims 1-21 stand rejected under § 103(a) as allegedly being unpatentable over Arnold

and Kobayashi.

Claims 1, 7 and 13

The Examiner alleges that Arnold (at col. 4, lines 12-20) discloses "receiving a request

for data at a federated data source", as recited in claim 1 (*see also* claims 7 and 13). To the

contrary, Arnold merely describes a system for distributed computing over a network. Arnold

fails to teach or suggest any federated data source, let alone receiving a request for data at a

federated source. A federated data source is a virtual datastore which combines several

heterogeneous datastores into a consistent and unified conceptual view (*see, e.g.,* Applicants'

Specification at page 8, lines 7-13). The Examiner acknowledges that Arnold fails to teach or

suggest a server connected to one or more heterogeneous datastores (*see* Office Action, page 3).

Indeed, the term "heterogeneous" is used in Arnold to refer to the network computer

environment, *i.e.,* a network made up of computers having different processor and operating

system combinations (Arnold: col. 2, lines 60-63). Consequently, Arnold does not teach and

cannot possibly suggest "receiving a request for data at a federated data source", as recited in

claim 1 (*see also* claims 7 and 13).

The Examiner further alleges that Arnold discloses (at col. 6, lines 43-57) "selecting a

server to process the request based on a load of the server and based on whether the server can

satisfy the request for data", as recited in claim 1 (*see also* claims 7 and 13). In Arnold, a client

selects a suitable server from the network to process the task (Arnold: col. 6, lines 42-57). This

selection can be based on a load distribution among the collection of servers or the specialized

computing capabilities of each server computer (*Id.*). However, the use of servers having

specialized hardware relates to the speed/efficiency with which the task is executed and not to

whether the task can be executed by the server (Arnold: col. 1, lines 19-23; col. 52-27).

Furthermore, Arnold fails to teach or suggest "selecting a server to process the request [for data]

. . . based on whether the server can satisfy the request for data". Arnold relates to distributing a

task from a client computer to server computer in a collection of server computers, and does not

relate to satisfying a request for data received at a federated data source (*see* claims 1, 7 and 13).

The Examiner acknowledges that Arnold fails to teach or suggest that "said server [is]

connected to one or more heterogeneous datastores", as recited in claim 1 (*see also* claims 7 and

13). To make up for this acknowledged deficiency of Arnold, the Examiner relies on Kobayashi

as allegedly disclosing "said server connected to one or more heterogeneous datastores".

Nonetheless, Kobayashi fails to make up for the aforementioned deficiencies of Arnold.

Furthermore, the Examiner alleges that it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the server in Arnold by including said server connected to one or more heterogeneous datastores as taught in Kobayashi, such that the overall system structure is simplified and thereby lowering cost (*see* Office Action, page 4). Applicants respectfully disagree.

Applicants note that to establish a *prima facie* case of obviousness, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings (*see* MPEP § 2143).

Furthermore, as the Federal Circuit has emphasized, the USPTO is held to a *rigorous* standard when trying to show that an invention would have been obvious in view of the combination of two or more references (*see In re Sang Su Lee*, 2002 U.S. App. LEXIS 855, *10 (Fed. Cir. 2002), *citing, e.g., In re Dembiczak*, 175 F.3d 994, 999, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999) ("Our case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references.")).

Applicants respectfully submit that the current grounds of rejection do not satisfy the Federal Circuit's standard for demonstrating that the claimed invention would have been obvious in view of the combination of Arnold and Kobayashi.

Indeed, there does not appear to be any suggestion or motivation (absent impermissible

hindsight), either in the references themselves or in the knowledge generally available to one of

ordinary skill in the art, to modify the references or to combine reference teachings. For

example, Arnold is not related to datastores (*e.g.*, data bases). Instead, Arnold is related to

improving conventional distributed computer systems (Arnold: col. 1, lines 8-60). Disparately,

Kobayashi relates to a database access system (Kobayashi: Abstract). The portion of Kobayashi

relied upon as allegedly providing the motivation for modifying Arnold to include aspects of

Kobayashi is col. 3, lines 45-49, which describes improving conventional database access

systems. Thus, the problems that Kobayashi seeks to address (*see* Kobayashi: col. 2, line 66 to

col. 3, line 22) do not arise in the context of Arnold, which is not related to a database access

system.

Furthermore, the Examiner's conclusion that the proposed modification of Arnold would

simply its overall system structure and thereby lower its cost is flawed. Contrary to simplifying

the overall system structure of Arnold, adding the databases described in Kobayashi would

increase the overall system complexity and consequently the overall system cost.

Additionally, any modification to Arnold to include the databases of Kobayashi would

require the addition of the intermediate layer (*i.e.*, application server) which connects the client

terminals (via a network) to the databases (*see* Kobayashi: col. 4, lines 40-43; Fig. 1). Thus, the

proposed modification of Arnold would drastically increase the overall system complexity and

consequently its cost.

Further still, the Examiner fails to establish a reasonable likelihood/expectation of success in adopting such a radical modification of Arnold (*see* MPEP § 2143). In Kobayashi, there is a clear delineation between the clients and the servers (*see, e.g.,* the three-layer structure illustrated in Fig. 1 of Kobayashi). Conversely, given that Arnold relates to distributed computing over a network, as opposed to controlling access to a plurality of databases by a plurality of clients, there is no such delineation between a client and a server in Arnold (Arnold: col. 4, lines 48-56). Thus, it is not clear where or how the Examiner proposes to add the databases of Kobayashi to Arnold. As noted above, with respect to "why" the Examiner proposes to add the databases of Kobayashi to Arnold, *i.e.,* to allegedly simplify the system structure thereby lowering costs, Applicants respectfully submit that such an outcome would not be logically viewed as resulting from the proposed modification such that one of ordinary skill in the art would have been motivated to make the modification at the time of the invention.

For at least the above reasons, the Examiner has failed to establish a *prima facie* case of obviousness by demonstrating some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Additionally, even assuming *ad arguendo* that a valid suggestion or motivation exists for combining the references, the combination of Arnold and Kobayashi fails to teach or suggest the various features of claim 1, as discussed above (*see also* claims 7 and 13).

In view of the above, claims 1, 7 and 13 are patentable over Arnold and Kobayashi under § 103(a).

Claims 2-6, 8-12 and 14-21

Claims 2-6, 8-12 and 14-21 are patentable over Arnold and Kobayashi at least by virtue

of their dependency, as well as the additional features recited therein. For example and not by

way of limitation:

Claim 3 recites the step of "forwarding additional requests for similar data to the selected

server" (*see also* claims 9 and 15). The Examiner alleges that Arnold discloses this step at col. 6,

lines 42-58. To the contrary, as noted above, Arnold does not involve any requests for data.

Thus, Arnold does not teach and cannot possibly suggest forwarding additional requests for

similar data to the selected server. Furthermore, the portion of Arnold relied upon by the

Examiner relates to selecting a server to process a task (Arnold: col. 6, lines 42-57). However,

even in this regard, Arnold fails to teach or suggest that additional requests to have the task

processed would be forwarded to the initially selected server. Indeed, the selection criteria relied

upon in Arnold (*e.g.*, the load distribution among the collection of server computers) may have

changed since a server was last selected, thus resulting in a different server being selected to

process a similar task.

Claim 4 recites that "the server is within a server hierarchy" (*see also* claims 10 and 16).

The Examiner alleges that Arnold discloses this feature at col. 4, lines 28-56. To the contrary,

Arnold merely describes coupled (*e.g.*, via network interconnect devices) computer systems

forming a network (Arnold: Fig. 1). Conversely, Applicants' claimed invention recites a

hierarchy of servers (*see* claims 4, 10 and 16). It may assist the Examiner's understanding to

refer to the illustrative discussion of a server hierarchy provided in Applicants' Specification at

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page 45, lines 8-20 (*see also* Applicants' Fig. 7). In Arnold, there simply is no hierarchy.

Indeed, with respect to the computers making up the network, Arnold notes that each computer

may operate as either a client or a server (Arnold: col. 4, lines 52-56).

Claim 5 recites the step of "upon receiving a request to add another server, connecting the

server to an existing server in the server hierarchy based on a number of connections of the

existing server" (*see also* claims 11 and 17). The Examiner alleges that Arnold discloses this

step at col. 4, lines 28-56. However, as noted above, Arnold fails to teach or suggest a server

hierarchy. Consequently, Arnold does not teach and cannot possibly suggest that "upon

receiving a request to add another server, connecting the server to an existing server in the server

hierarchy based on a number of connections of the existing server", as recited in claim 5 (*see*

also claims 11 and 17). Indeed, in Arnold, adding a computer to the network (*e.g.*, LAN 101 or

LAN 116) does not correspond to connecting a server to an existing server in the server

hierarchy. For example, adding a new computer to LAN 101 would simply connect the new

computer to existing computers 102-108 via LAN 101 and to existing computers 118-124 via

LAN 116 and WAN 118. Furthermore, Arnold clearly fails to teach or suggest connecting

another server to an existing server "based on a number of connections of the existing server", as

recited in claim 5 (*see also* claims 11 and 17).

Claim 6 recites the step of "upon receiving a request to delete an existing server in the

hierarchy, deleting that server" (*see also* claims 12 and 18). The Examiner alleges that Arnold

discloses this step at col. 4, lines 28-56. However, as noted above, Arnold fails to teach or

suggest a server hierarchy. Consequently, Arnold does not teach and cannot possibly suggest

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that " upon receiving a request to delete an existing server in the hierarchy, deleting that server",

as recited in claim 6 (*see also* claims 12 and 18). Indeed, Arnold fails to teach or suggest any

requests for deleting servers.

Claim 19 recites that "said load of the server is based on at least the ratio of a current load

of the server and a maximum load of the server" (*see also* claims 20 and 21). The Examiner

alleges that Arnold discloses this feature at col. 6, lines 42-58. To the contrary, Arnold describes

a selection criteria based upon the overall processing load distribution among the collection of all

of the server computers or the specialized computing capabilities of each server computer

(Arnold: col. 6, lines 46-49). Indeed, in the distributed computing system of Arnold, by

considering the entire collection of servers relative to one another, a computer having the least

load at a given moment can be identified (Arnold: col. 6, lines 49-52). However, Arnold fails to

teach or suggest that the load of a single sever is based on at least the ratio of a current load of

the server and a maximum load of the server (*see* claims 19-21).

III. Claim Rejections -- Nilsen

Claims 1-21 stand rejected under § 103(a) as allegedly being unpatentable over Nilsen.

Claims 1, 7 and 13

Claim 1 is directed to a method "for searching for data in one or more heterogeneous data

sources within a computer system" (*see also* claims 7 and 13). Claim 1 recites, *inter alia*,

"receiving a request for data at a federated data source" (*see also* claims 7 and 13). The

Examiner alleges that Nilsen discloses this feature at col. 3, lines 53-55.

To the contrary, Nilsen describes a workstation 104 generates a request 202 to begin

logging data, *i.e.*, storing the data (Nilsen: col. 3, lines 48-63). Thus, to the extent that the data

has not been stored yet, Nilsen fails to teach and cannot possibly suggest "receiving a request for

data at a federated data source", as recited in claim 1 (*see also* claims 7 and 13).

Furthermore, Nilsen fails to teach and cannot possibly suggest "selecting a server to

process the request based on a load of the server and based on whether the server can satisfy the

request for data", as recited in claim 1 (*see also* claims 7 and 13). The Examiner alleges that

these features are disclosed in Nilsen at col. 3, lines 35-61. Again to the contrary, Nilsen

describes selecting a server to log the data, *i.e.*, to store the data (Nilsen: col. 3, lines 9-14, 42-44

and 48-66). Any consideration of the load on each of the servers or the like is limited to these

logging requests (*Id.*), as opposed to processing a request for data at a federated datastore (*see*

claims 1, 7 and 13). Indeed, in Nilsen, when a database is queried to access logged data, the

controller simply examines its data logging records to determine the database server location for

the requested data (Nilsen: col. 4, lines 23-40). Thus, in processing a database query, there is no

consideration of a load of the database servers nor is there any determination as to whether the

database servers can satisfy the request for data.

Further still, the Examiner acknowledges that Nilsen fails to teach or suggest that "said

[selected] server [is] connected to one or more heterogeneous datastores", as recited in claim 1

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(*see also* claims 7 and 13). However, the Examiner alleges that the controller 132 is equivalent to the recited server (*see* Office Action, page 6). Consequently, the Examiner alleges that it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Nilsen by including the server connected to one or more heterogeneous datastores in order to manage large volumes of data (*Id.*). In view of the Federal Circuit's standard, as set forth above, Applicants respectfully disagree.

As noted in Applicants' specification, the heterogeneous datastores connected to servers allows a hierarchical grouping of servers, and thus their datastores, to be configured (*see, e.g.,* Applicants' Specification at page 44, lines 22-28; Fig. 7). Conversely, Nilsen relates to a distributed database for logging historical data (Nilsen: Abstract). In Nilsen, the controller 132 is a centralized entity within the network (Nilsen: col. 3, lines 34-36).

The Examiner's alleged motivation for modifying Nilsen, *i.e.*, in order to manage large volumes of data, evidences impermissible hindsight on the part of the Examiner, given that Nilsen already provides a mechanism for managing large volumes of data. Indeed, without the inclusion of any servers to which datastores are connected, as proposed by the Examiner, Nilsen already describes that when the volume of data in a particular configuration is expected to increase, additional databases can be installed on the network (Nilsen: col. 4, lines 17-19).

Furthermore, Nilsen teaches away from the Examiner's proposed modification by noting advantages of having a centralized controller: The use of a central configuration controller 132

provides flexibility to the network manager to readily add or delete database servers as demanded by the database logging application (Nilsen: col. 4, lines 19-22).

Thus, the Examiner has failed to establish a *prima facie* case of obviousness by demonstrating some suggestion or motivation, either in the reference itself or in the knowledge generally available to one of ordinary skill in the art, to modify the reference in the proposed fashion. Additionally, even assuming *ad arguendo* that a valid suggestion or motivation exists for modifying the reference, Nilsen fails to teach or suggest the various features of claim 1, as discussed above (*see also* claims 7 and 13).

In view of the above, claims 1, 7 and 13 are patentable over Nilsen under § 103(a).

Claims 2-6, 8-12 and 14-21

Claims 2-6, 8-12 and 14-21 are patentable over Nilsen at least by virtue of their dependency, as well as the additional features recited therein. For example and not by way of limitation:

Claim 4 recites that "the server is within a server hierarchy" (*see also* claims 10 and 16). The Examiner alleges that Nilsen discloses this feature at col. 4, lines 36-41. To the contrary, Nilsen merely describes attaching database servers 120-124 to workstations 102 and 104 by a network 30 (Nilsen: Fig. 1). Furthermore, a central configuration controller 132 or 134 manages the process through which data is logged from a workstation 102 or 104 to database servers 120-124 (Nilsen: col. 3, lines 41-46). Conversely, Applicants' claimed invention recites a hierarchy of servers (*see* claims 4, 10 and 16). It may assist the Examiner's understanding to refer to the

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illustrative discussion of a server hierarchy provided in Applicants' Specification at page 45,

lines 8-20 (*see also* Applicants' Fig. 7). In Nilsen, there simply is no hierarchy. Indeed, in

Nilsen, each of the database servers 120-124 is independently connected to the other system

components via the network 130, but none of the database servers 120-124 are directly

connected to other database servers so as to form a server hierarchy.

Consequently, because Nilsen fails to teach or suggest a server hierarchy, Nilsen fails to

teach and cannot possibly suggest the step of "upon receiving a request to add another server,

connecting the server to an existing server in the server hierarchy based on a number of

connections of the existing server", as recited in claim 5 (*see also* claims 11 and 17). Likewise,

Nilsen fails to teach and cannot possibly suggest the step of "upon receiving a request to delete

an existing server in the hierarchy, deleting that server" (*see also* claims 12 and 18).

IV. Conclusion

In view of the above, reconsideration and allowance of this application are now believed

to be in order, and such actions are hereby solicited. If any points remain in issue which the

Examiner feels may be best resolved through a personal or telephone interview, the Examiner is

kindly requested to contact the undersigned attorney at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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